AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [0001] with the following amended paragraph:

[0001] The invention concerns a cardiac pacemaker arrangement as set forth in the classifying portion of claim 1 and a method of controlling a cardiac pacemaker as set forth in the classifying portion of claim [[6]]8.

Please replace paragraph [0002] with the following amended paragraph:

[0002] Auricular fibrillation which occurs paroxysmally, [[–]] that is to say in the nature of sudden attacks, [[–]] nowadays represents a clinical challenge. According to the respective literature source involved, it is assumed that up to 10% of all patients over 60 years of age suffer from auricular fibrillation. Hitherto, auricular fibrillation is deemed to be incurable. There is a series of therapeutic approaches, [[–]] from drug therapy through cardiac pacemaker therapy and defibrillator therapy to various ablation procedures, [[–]] all of which, however, still fail to give satisfactory results.

Please replace paragraph [0011] with the following amended paragraph:

[0011] Figures 3A and 3B show[[s]] illustrations of different electrodes and, [[–]] beneath same, [[–]] the illustrations associated with those arrangements of intracardial derivations,

Please replace paragraph [0017] with the following amended paragraph:

[0017] In the applicant's own animal-experiment investigations it was possible for the first time to show the advantage of atrial signal perception by way of floating ring electrodes in comparison with wall-located electrodes. Figure 1 shows an example of simultaneous registration of bipolar sensing of the intrinsic activation times (in ms) both

using atrial electrodes with wall contact in the high lateral right atrium ("HRA"), at the ostium of the coronary sinus ("Cs-Os") and at the His's bundle ("HABE") and also by way of floating electrodes of a VDD-electrode in the central right atrium ("Floating"), in which respect it can be seen from Figure 1 that atrial signals are perceived by way of the floating electrodes earlier than by way of the wall-located electrodes, irrespective of the placement in the atrium[[:]].

Please replace paragraph [0018] with the following amended paragraph:

[0018] It was found in that animal-experimental study that atrial signals are perceived by way of floating ring electrodes as follows:

22 ± 4 ms ($p < 0.05$) earlier than the commencement of the P-wave in the surfaces, [[–]] ECG der. 1,

and 22 ± 5 ms ($p < 0.05$) earlier than the earliest perception by way of the wall-located electrodes in the high right atrium (HRA: typical wall-located electrode positioning in conventional pacemaker therapy),

and 36 ± 13 ms earlier in comparison with the His's bundle position (HBE) ($p < 0.05$),

and finally 43 ± 8 ms earlier ($p < 0.05$) with respect to the electrode positioning at the coronary sinus ostium (Cs-Os or lower right atrium = URA).

Please replace paragraph [0019] with the following amended paragraph:

[0019] Figure 2 shows the atrial intrinsic sensing commencement in the case of wall-located electrode positioning in the high right atrium (HRA), at the His's bundle (HBE) and at the ostium of the coronary sinus (Cs-Os; corresponds to the lower right atrium = URA) and in the surfaces, [[–]] ECG der. 1 (P-wave) with respect to the sensing commencement by way of floating electrodes (Floating). This involves experimental data from 15 Merino sheep.
Values identified by * are significantly later with respect to the sensing commencement by way of the floating electrodes.

Please replace paragraph [0021] with the following amended paragraph:

[0021] The results presented here, with simultaneous intrinsic signal perception by way of wall-located and floating electrodes ~~*cannot*~~ cannot be explained with that theory. If floating sensing were only to reflect local activation at the level of the electrodes, atrial signal perception by way of wall-located electrodes in the HRA would have commence earlier. The intrinsic atrial excitation front begins in the sinus node and passes with a longitudinal propagation speed of 0.6 m/s by way of the atrium myocardium.

Please replace paragraph [0026] with the following amended paragraph:

[0026] The results presented here relating to earlier signal perception by way of floating electrodes in comparison with all wall-located electrode positions contradict that theory from Antonioli. Results of investigations that were carried out by the applicant show further proof in respect of that "farfield theory". In such investigations, simultaneous electrogram recordings were implemented, more specifically both during a wall-located electrode position in the HRA and at the Cs-Os, and also after moving those electrodes away from the atrial wall so that they floated freely in the atrium. Figures 3A and 3B show[[s]] in the upper part thereof an example of two RAO 30°-transillumination recordings. Recording 3A shows a wall-located position in the HRA and at the Cs-Os and a floating position in the middle atrium. Recording 3B shows a floating position in the HRA and above the Cs-Os and a floating position in the middle atrium.

Please replace paragraph [0027] with the following amended paragraph:

[0027] With the floating positioning of the electrodes in the various stages of the right atrium, the previously documented difference in the beginning of atrial signal perception disappears. The associated simultaneous recording of the intracardial derivations now causes the commencement of the atrial signals to appear almost at the same time.

Please replace paragraph [0028] with the following amended paragraph:

[0028] The lower part of Figures 3A and 3B show[[s]], recorded from left to right, the simultaneous recording of the electrograms and the surfaces, [[–]] ECG der. 1 in the case of wall-located positioning in the HRA and at the Cs-Os (Fig. 3A) and with a floating electrode position in the HRA and above the Cs-Os (Fig. 3B). The recorded signals in the HRA, at the Cs-Os and the floating ring electrodes are shown. ~~identified in red or marked by a boundary edge.~~ The perpendicular line in each case identifies the commencement of signal perception by way of the floating electrodes E_1 and E_2. During the floating position the differing commencement of the atrial signal, during the wall-located position, is almost nullified.

Please replace paragraph [0029] with the following amended paragraph:

[0029] Purely by way of example, in the illustrated embodiment there is a single wall-located electrode and two floating electrodes. It is however also possible to use a number differing therefrom of the respective type of electrode in order, for example, to be better able ~~better~~ to determine the propagation behavior of the atrial signals.

Please replace paragraph [0031] with the following amended paragraph:

[0031] Based on this novel theory of "floating sensing", therefore, it is also possible to perceive atrial ectopias at an earlier time than by way of wall-located electrodes. Earlier perception of signals permits an earlier reaction by stimulation and, thereby, possibly makes it possible to prevent the occurrence of auricular fibrillation or atrial tachycardia and ectopias.

Please replace paragraph [0037] with the following amended paragraph:

[0037] By means of a novel mapping system (CARTO system), the applicant was able to represent the atrial simultaneous activation area under floating stimulation.[[:]] Figure 5 shows [[as]] an example of an illustration of the activation sequences during floating atrial stimulation

which results in large-area simultaneous activation of the atrial myocardium, a posterior view of a CARTO mapping recording with atrial floating stimulation. The region of the earliest activation is illustrated ~~in red or~~ by hatching while the ~~blue or~~ square-marked area identifies the region of latest activation. The procedure virtually involves a belt-shaped simultaneous early activation of the entire right atrium including the interatrial septum. The simultaneously activated area is consequently a multiple larger, in comparison with wall-located stimulation.

Please replace paragraph [0040] with the following amended paragraph:

[0040] In new, hitherto unpublished animal-experiment investigations however the applicant was able to establish that it is possible to terminate auricular fibrillation with the large-area atrial high-frequency floating stimulation. Figure 6 shows an example of surface ECG and intracardial recordings of a termination of auricular fibrillation by using the large-area floating atrial stimulation at high frequency, on the basis of an example of an animal-experiment simultaneous recording, which is registered from left to right, with a wall-located electrode position in the high right atrium (HRA), at the His's bundle (HBE), at the ostium of the coronary sinus (Cs-Os; this corresponds to the lower right atrium – URA) and at the wall of the left atrium (LLA) and a floating electrode position in the middle right atrium (floating) and in the surfaces, [[–]] ECG der. 1 (P-wave) during induced auricular fibrillation. In the middle portion, high-frequency stimulation is effected by way of the floating electrodes with the OLBI-configuration, thereby affording termination of the auricular fibrillation, as is apparent from the rear portion of the recordings.

Please replace paragraph [0046] with the following amended paragraph:

[0046] Normal atrial stimulation is effected by way of the wall-located electrode in a conventional manner. If atrial tachycardias or auricular fibrillation are perceived, the arrangement switches over to the termination mode. That evaluation is effected for example on the basis of the frequency of the perceived signals. In that respect, it is possible to provide for individual adaptation of the frequency limit value to the individual patients.[[:]] [[f]]Frequencies

above for example about 150 Hz or 180 Hz can be assessed as an indication of atrial tachycardias or auricular fibrillation. Optionally, in place of [[–]] or combined with [[–]] a frequency limit value which is fixedly predetermined or set on an individual patient basis, another "trigger" can cause the pacemaker to switch over to the termination mode.[[:]] [[t]]That switching-over action can take place, for example, in dependence on the origin or the propagation characteristics of the atrial signals, in which respect such perception is possible by comparison of the simultaneous perceptions by way of the floating and the wall-located electrodes.

Please replace paragraph [0048] with the following amended paragraph:

[0048] In the termination mode the impulses can be applied either between the wall-located and the floating electrode, or electrodes, or only between the floating electrodes. The impulses which are used in that situation can represent both conventional impulse configurations and also special impulse configurations such as OLBI or BIMOS. However, other forms of impulse application, either by way of the floating ring electrodes only or by way of the wall-located and floating electrodes jointly, can also be envisaged.

Please replace the ABSTRACT with the following amended ABSTRACT:

In a cardiac pacemaker arrangement comprising an electrode arranged floatingly in the atrium, a circuit for perceiving atrial signals, and a circuit for stimulating the atrial myocardium by means of the electrode, the invention proposes that in addition there is provided a wall-located electrode, and stimulation is effected by means of the wall-located electrode if the circuit, upon perceiving atrial signals, does not detect high-frequency irregularities, [[-]] such as auricular fibrillation or atrial tachycardias, [[– -]] as on the basis of inadmissibly high signal frequencies [[-]], and stimulation is effected by means of the floating electrode if the circuit, upon perceiving atrial signals, detects irregularities of that kind. This permits early detection and termination of atrial tachycardias and auricular fibrillation.